Unexpected prolonged neuromuscular blockade in an eclamptic patient requiring emergent caesarean delivery

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Case presentation:

- 31 y.o. (72.3 kg) G1P0 at 38+4 GA with severe hypertension, headache and blurry vision
- Plan: Magnesium, nifedipine + urgent caesarean delivery
- Prior to OR → seizure + prolonged fetal bradycardia
- RSI (propofol + succinylcholine 160 mg) →emergent delivery of fetus
  - Maintenance: propofol, remifentanil, sevoflurane
- Persistent motor blockade after cessation of anesthesia x 20 minutes

Table 1. *Laboratory results*

Platelets	75 x 10^9/L
Urine P:Cr	2859 g/mol
Bilirubin	55 umol/L (<2)
AST	446 U/L (<40)
ALT	342 U/L (<55)
LDH	1424 U/L (<250)

Two hours after initial succinylcholine administration

- ➢ Evidence of muscle blockade with peripheral nerve stimulation
  - ➢ Neuroimaging with CT head

Three hours after initial succinylcholine administration

- ➢ Extubation criteria met and endotracheal tube removed

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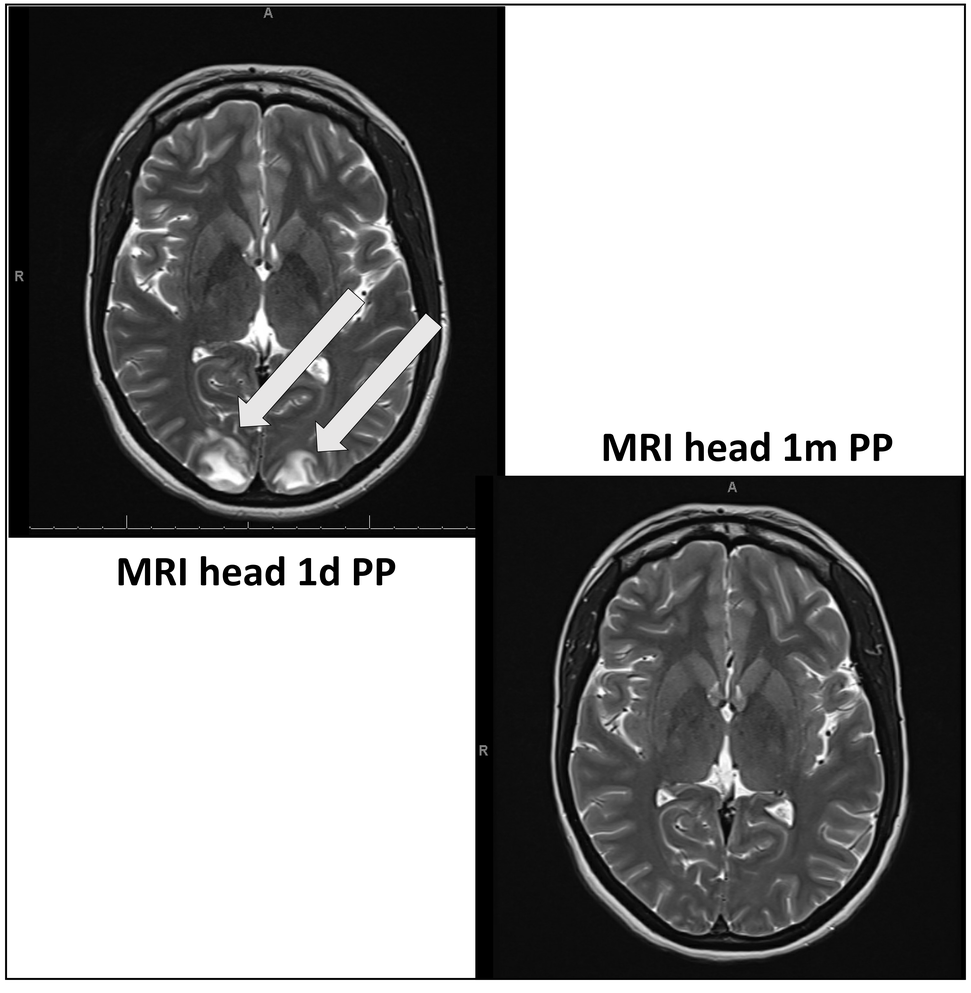

Differential Diagnosis:

- Pseudocholinesterase Deficiency
  - PChE activity measured (collected 1d PP)
    - Cholinesterase, total 192 U/L (620-1370 U/L)
    - Cholinesterase phenotype: homozygous for typical enzyme
    - ? reduced activity due to pregnancy and liver dysfunction

Phenotype	Dibucaine #
Homozygous typical	70-80
Heterozygous atypical	50-60
Homozygous atypical	20-30

- Magnesium + Nifedipine
  - Magnesium level 1.91 mmol/L 5 hours following delivery
    - ? Potentiation of NMB from magnesium
- Intracranial Process
  - CT and MRI revealed changes consistent with posterior reversible encephalopathy syndrome (PRES)

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Discussion:

- Multiple differential diagnoses in a parturient with prolonged neuromuscular blockade
  - PChE activity can be evaluated by studies which investigate activity level and gene phenotype

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- Repeat testing can help reveal the extent to which pregnancy and liver disease can affect cholinesterase activity
  - This should be completed >2 months post-delivery after activity levels are expected to normalize

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- Controversy whether routine peripheral nerve monitoring of neuromuscular blockade should be mandatory following succinylcholine
  - Residual blockade confirmed with peripheral nerve stimulation + allowed for continued monitoring of resolution of block